

## GIANT MAGNETORESISTIVE SENSOR HAVING SELF-CONSISTENT DEMAGNETIZATION FIELDS

### ABSTRACT OF THE DISCLOSURE

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The present invention is directed to a spin valve sensor for use in a data storage system, that is adapted to receive a sense current and produce a GMR effect in response to applied magnetic fields. The spin valve sensor includes first and second ferromagnetic free layers, a spacer layer positioned between the first and second ferromagnetic free layers, and a biasing component. The first ferromagnetic free layer has a magnetization ( $M_1$ ) in a first direction, when in a quiescent (non-biased) state. The second ferromagnetic free layer has a magnetization ( $M_2$ ) in a second direction that is anti-parallel to the first direction, when in a quiescent (non biased) state.

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